

REMARKS

The present remarks are in response to the Office Action of October 21, 2004. Claims 1-27 are currently pending. Reconsideration of the application is respectfully requested in view of the following responsive remarks. For the Examiner's convenience and reference, the Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

In the Office Action, the following rejections were made:

- (1) claims 1, 3-9, 11, 13-21 and 23-27 were rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as being obvious over U.S. Pat No. 6,177,498 (hereinafter "Rehman"); and
- (2) claims 2, 12 and 22 were rejected under 35 U.S.C. 103(a) as being unpatentable over Rehman in view of U.S. Pat No. 5,571,311 (hereinafter "Belmont").

Rejections over Rehman

The Examiner has rejected claims 1, 3-9, 11, 13-21 and 23-27 under 35 U.S.C. 102(b) as being anticipated by Rehman, or in the alternative, as being unpatentable under 35 U.S.C. 103(a) over Rehman. Before discussing the rejections under 35 U.S.C. 102(b) and 103(a), it is thought proper to briefly state what is required to sustain such a rejection.

It is well settled that "[a] claim is anticipated only if each and every element as set forth in the claims is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil of California*, 814 F.2d 628, 2 U.S.P.Q. 2d 1051, 1053 (Fed. Cir. 1987). In order to establish anticipation under 35 U.S.C. §102, all elements of the claim must be found in a single reference. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986), *cert. denied* 107 S.Ct. 1606 (1987). In particular, as pointed out by the court in *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1981), *cert denied*, 469 U.S. 851 (1984), "anticipation requires that each and every element of the claimed invention be disclosed in a prior art reference." "The identical invention must be shown in as complete detail as is contained in the...claim." *Richardson v. Suzuki Motor Co.* 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989).

Regarding obviousness, the issue under § 103 is whether the PTO has stated a case of *prima facie* obviousness. According to the MPEP § 2142, the Examiner has the burden and must establish a case of *prima facie* obviousness by showing some motivation in a prior art reference to modify that reference, or combine that reference with multiple references, to teach all the claim limitations in the instant application. Applicant respectfully asserts the Examiner has not satisfied the requirement for establishing a case of *prima facie* obviousness in this rejection.

Rehman discloses latex-containing inks that have a solvent system including at least two solvents, i.e. 3-hexyne-2,5-diol and 1,2-octanediol, which work together to improve the start-up, drop ejection, decap, and high frequency firing of the latex polymer-containing ink-jet inks. The material 1,3,5-(2-methyl)-pentanetriol is mentioned as a co-solvent that can also be included in the ink-jet ink (as at least a third co-solvent), along with many other possible co-solvent candidates.

The presently claimed invention provides a system for printing images on a substrate, having a black ink-jet ink which includes a liquid vehicle, a methylated pentanetriol co-solvent, and a dispersant-functionalized black carbon pigment. The black ink-jet ink composition is capable of being jetted from a printhead at a firing frequency from 15 kHz to 25 kHz. As there is no teaching in Rehman for achieving a firing frequency range of from 15 kHz to 25 kHz, there cannot be anticipation, as each and every element cannot be found in Rehman. Thus, withdrawal of this rejection under 35 U.S.C. 102(b) over Rehman is respectfully requested.

Regarding the obviousness rejection under 35 U.S.C. 103(a), further clarification will be provided as to why the range of 15 kHz to 25 kHz is not suggested by Rehman. As apparent from the claimed range of the present application, the firing frequency must be significantly greater than the "high" firing frequency of "above 10 kHz" disclosed in Rehman. It appears that the Examiner has misinterpreted the meaning of "above 10 kHz" in the Rehman reference. The Examiner's interpretation seems to be that "above 10 kHz" refers to a range of frequencies having a lower value of 10 kHz (with no upper limit). Under this erroneous interpretation, the ink composition of Rehman may be able to be fired at a firing frequency of 100 kHz or even 1000 kHz. These frequencies would be recognized by one skilled in the art to be unattainable in any practical sense. This being the case, this point is of no consequence as it requires an interpretation of this term that is counter to the context of the teachings of Rehman as a whole.

The correct context of the term "above 10 kHz" is that of a benchmark by which the inks disclosed in Rehman can be measured with respect to the inks "printability." In other words, there is no teaching in Rehman that states that it is attainable or even desirable to achieve significantly higher frequencies, just that the inks described therein can be fired at high frequencies of "above 10 kHz," thus, passing the printability standard set forth therein. A benchmark of above a certain value does not teach significant improvement over that benchmark, nor does it suggest any range where both the lower and upper frequencies are over that benchmark. The range provided by the Applicant is about 50% faster at its lower end than the benchmark of Rehman. As the Examiner is aware, obvious to try is not the same as obviousness, and the fact that it may be obvious to want to achieve

faster firing frequencies cannot be used to render an invention obvious that actually achieves those faster firing frequencies. One skilled in the art would not look at a benchmark and consider that it would be uninventive to improve speed over that benchmark by at least 50%. Thus, the Applicant submits that presently claimed invention is not obvious over Rehman, as Rehman fails to teach at least one element of the claimed invention, i.e. the range of 15 kHz to 25 kHz, and there is no suggestion for modifying the reference to achieve these significantly higher frequencies.

As a further note, the Examiner has stated that when the firing frequency is just outside of the claimed range, a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap, but are close enough that one skilled in the art would have expected them to have the same properties. This statement is inapplicable to the presently claimed ranges, as Rehman does not even teach a range. As clarified above, Rehman teaches of a benchmark of above 10 kHz, and the claimed range of the present application exceeds this benchmark by about 50%. Further, a 50% increase in firing frequency would not be considered by one skilled in the art to be "close enough" that the inks would have been expected to have the same properties. Reconsideration on these grounds is respectfully requested.

Additionally, there is no suggestion in Rehman that the "high" frequencies of above 10 kHz achieved by Rehman are related to the inclusion of a methylated pentanetriol. The only time that the methylated pentanetriol is added to the ink is when it is added in conjunction with the 3-hexyne-2,5-diol and 1,2-octanediol. Rehman never teaches or suggests that methylated triols *per se* in an ink vehicle can be used to significantly improve firing frequency speed. Reconsideration on these grounds is also respectfully requested.

As a side note, it is unclear whether the Examiner intended to reject claim 10 of the present invention. On the Office Action Summary sheet the Examiner has rejected all pending claims, however, in the body of the office action the Examiner did not reject claim 10. As the firing frequency range of claim 10 is from 18 kHz to 25 kHz, which is still further removed from the benchmark of 10 kHz set forth in

Rehman, this range is also believed to be patentable over Rehman.

Reconsideration of all rejections over Rehman is thus respectfully requested.

Regarding independent claim 21, which does not include the frequency range limitation, the claim has been amended to clarify that the composition is a mixture of three components, namely a) a liquid vehicle having from 15 wt% to 30 wt% organic solvent, wherein from 3 wt% to 10 wt% of the organic solvent is 3-methyl-1,3,5-pentanetriol; b) from 1 wt% to 6 wt% of a dispersant-functionalized black carbon pigment; and c) from 0.1 wt% to 4 wt% of an ammonium salt. The prior art does not teach of using an ammonium salt as part of a mixture within the ink which is separate and distinct from the dispersant-functionalized black carbon pigment. Specifically, Rehman does teach using ammoniums generally for modifying the carbon black pigment, but does not include an ammonium salt as a separate constituent that is mixed in the ink-jet ink as a whole. Thus, claim 21 is believed to be patentable over Rehman, and reconsideration of this claim set is respectfully requested.

Rejection under 35 U.S.C. 103(a) in view of Belmont

The Examiner has also rejected claims 2, 12 and 22 under 35 U.S.C. 103(a) as being unpatentable over Rehman in view of Belmont. The Examiner has indicated that this obviousness rejection is based on the teaching of an aqueous ink-jet ink composition having a carbon black pigment resulting in an ink composition size of about 0.06 microns which is within the claimed range of the present invention. However, the Applicant submits that claims 2, 12 and 22 depend from allowable claims, and as such, this rejection is now rendered moot. Reconsideration of these rejections is also respectfully requested.

CONCLUSION

In view of the foregoing, Applicant believes that claims 1-27 present allowable subject matter and allowance is respectfully requested. If any impediment to the allowance of these claims remains after consideration of the above remarks, and such impediment could be removed during a telephone interview, the Examiner is invited to telephone Bradley Haymond at (541-715-0159) so that such issues may be resolved as expeditiously as possible.

Please charge any additional fees except for Issue Fee or credit any overpayment to Deposit Account No. 08-2025.

Dated this 21st day of January, 2005.

Respectfully submitted,



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